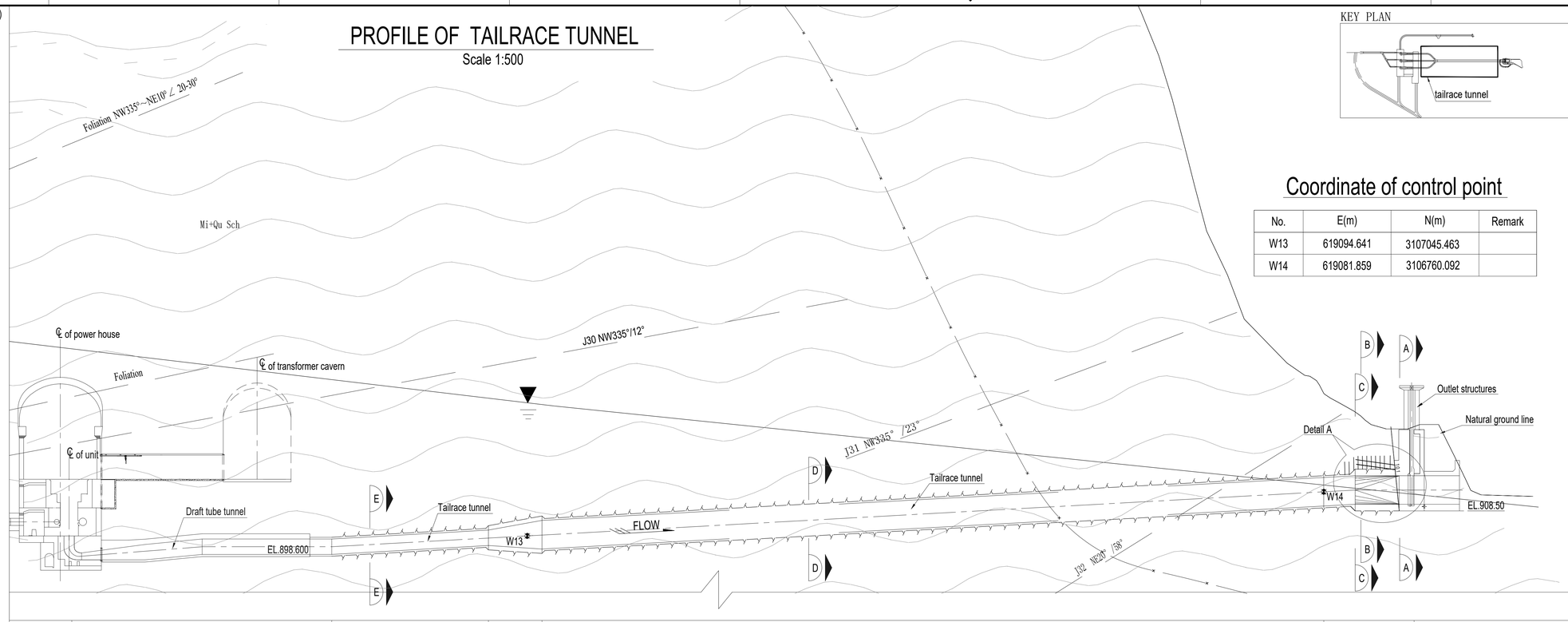
PROFILE OF TAILRACE TUNNEL

Scale 1:500



KEY PLAN

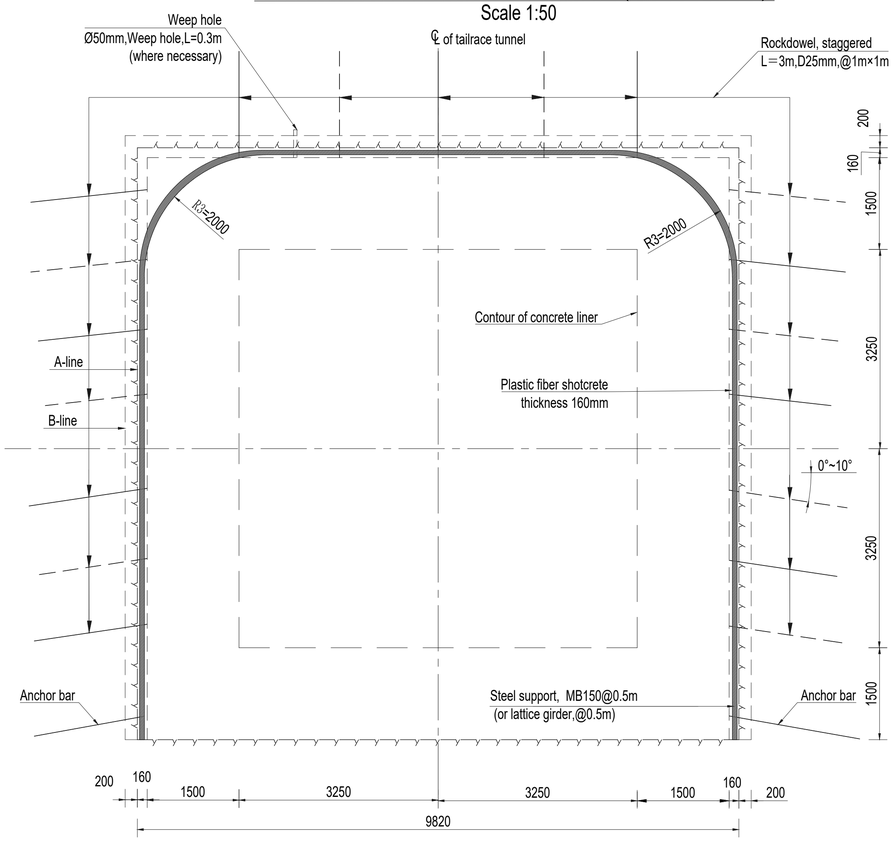
Coordinate of control point

No.	E(m)	N(m)	Remark
W13	619094.641	3107045.463	
W14	619081.859	3106760.092	

| | | |

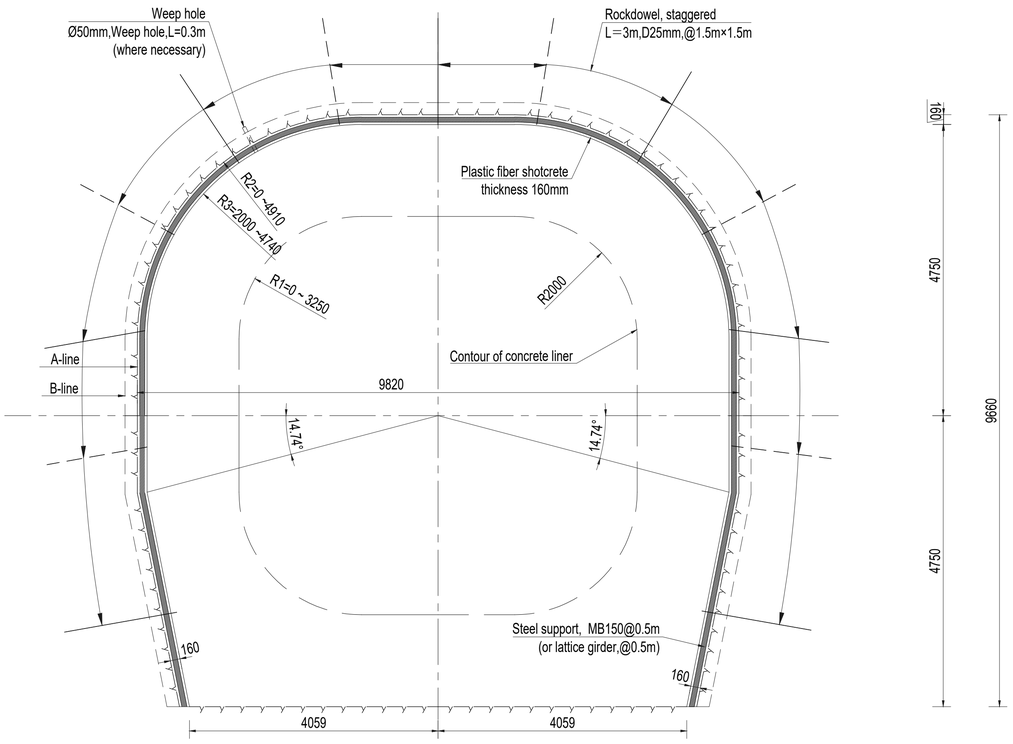
SUPPORT TYPE OF ROCK CLASS IV(SECTION A-A)

Scale 1:50



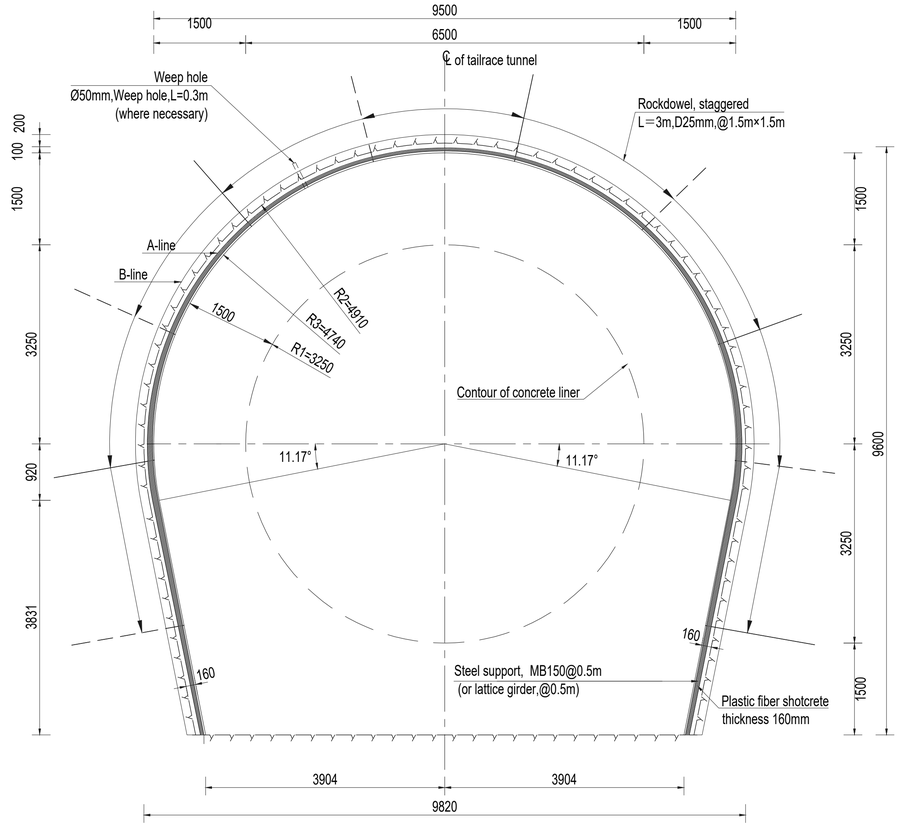
SUPPORT TYPE OF ROCK CLASS IV(SECTION B-B)

Scale 1:50



SUPPORT TYPE OF ROCK CLASS IV(SECTION C-C)

Scale 1:50



Note:

The outlet section of tailrace tunnel is a transition type. The change of the chamfer radius of the two corners on the top is as follows:

- The internal radius of the tunnel (R1) changes from 0 to 3.25m,
- The radius of the excavation section (R2) changes from 0 to 4.91m,
- The radius of the steel support (R3) changes from 2m to 4.74m.

NOTE

1. This set of drawings are the excavation and initial support of tailrace tunnel.
2. The cylinder specified compressive strength of shotcrete and cement mortar at 28 days of age is 25MPa.
3. The yield strength of steel is 250MPa.
4. Rust preventive compound will be sprayed on exposed surface of steel structure.
5. Symbol description:
   A-Line is the design excavation line.
   B-Line is the overbreak line.
   R denotes round bar, yield strength of the round bar is 280MPa.
   D denotes deformed bar, yield strength of the deformed bar is 500MPa;
6. See subsequent drawings for concrete structure and reinforcement.

Scale:
1:50 0 0.5 1 1.5 2 2.5m

REFERENCE DRAWINGS

UT1-C-070-CVL-DG-59001	LAYOUT OF TAILRACE SYSTEM
UT1-C-080-CVL-DG-59001	EXCAVATION AND SUPPORT DRAWING OF TAILRACE OUTLET GATE CHANMBER
UT1-C-000-CVL-DG-40001	DETAILED DESIGN DRAWING OF EXCAVATION AND SUPPORT FOR UNDERGROUND CAVERN

SYMBOL AND LEGEND

FOR APPROVAL

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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.
A	11.APR.,2022	FIRST ISSUE	ZHANG KAI	ZHANG J.Q.	ZHANG FAN LI W.G.

PROJECT TITLE

Upper Trishuli-1 HEP (216MW)

OWNER

NWEDC NEPAL WATER AND ENERGY DEVELOPMENT CO. PVT.LTD.

OWNER'S ENGINEER

TRACTEBEL ENGIE jade CONSULT

CONTRACTOR

DOOSAN Doosan Heavy Industries & Construction

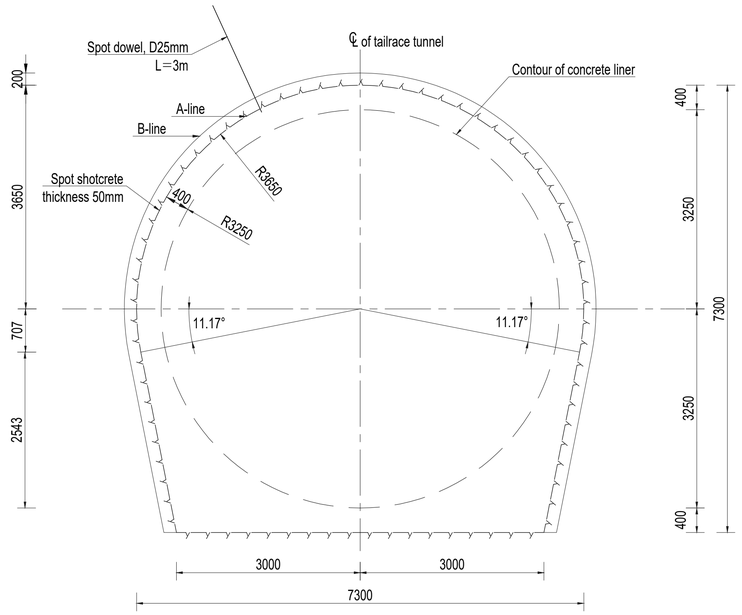
DRAWING TITLE

EXCAVATION AND INITIAL SUPPORT DRAWINGS OF TAILRACE TUNNEL(2/7)

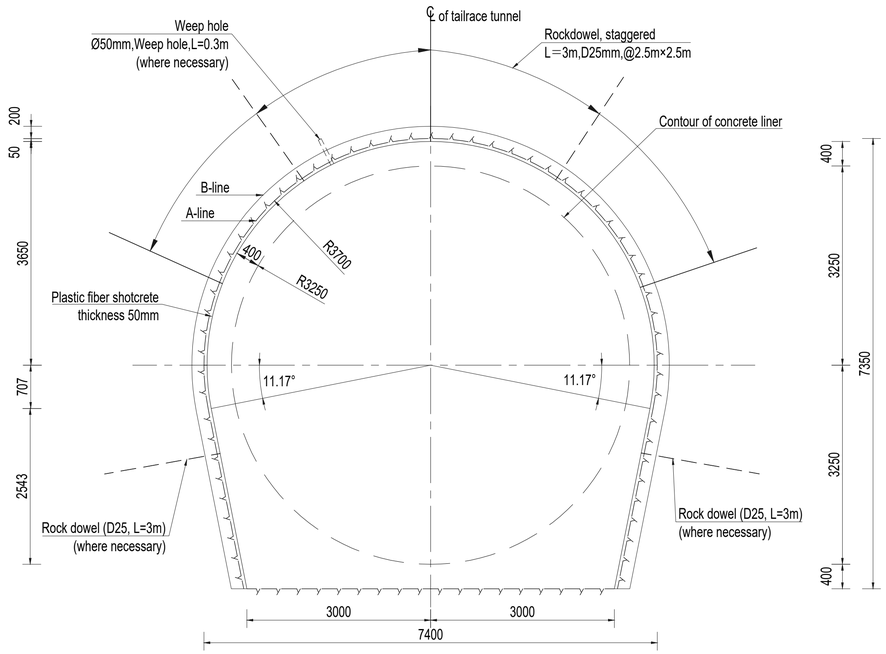
INDEX	DRAWING NUMBER	SHEET NO.	REV. NO.
A	UT1-C-070-CVL-DG-59002-02	2 OF 7	0A

A1 (594 x 841 MM)

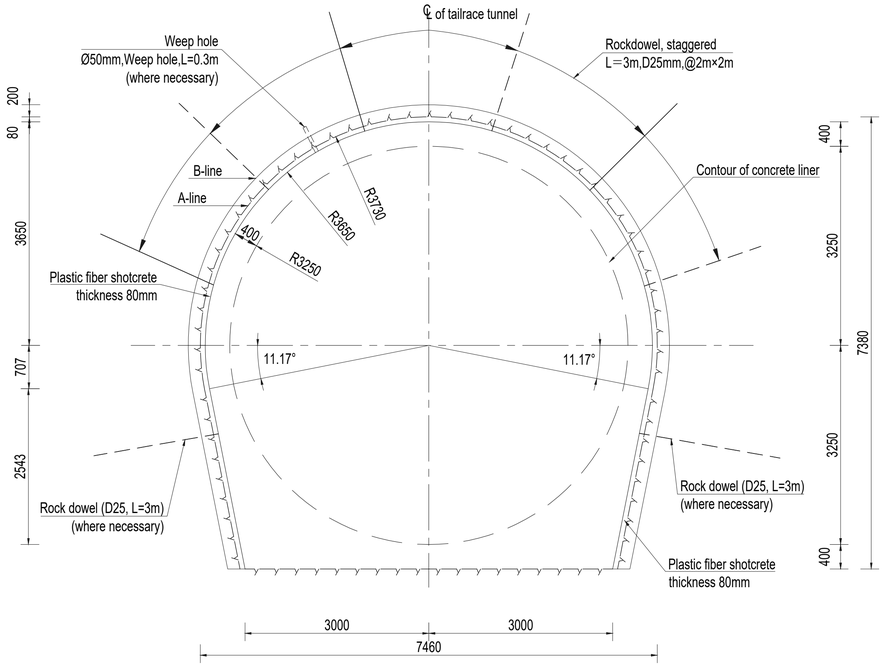
SUPPORT TYPE OF ROCK CLASS I
(SECTION D-D) Scale 1:50



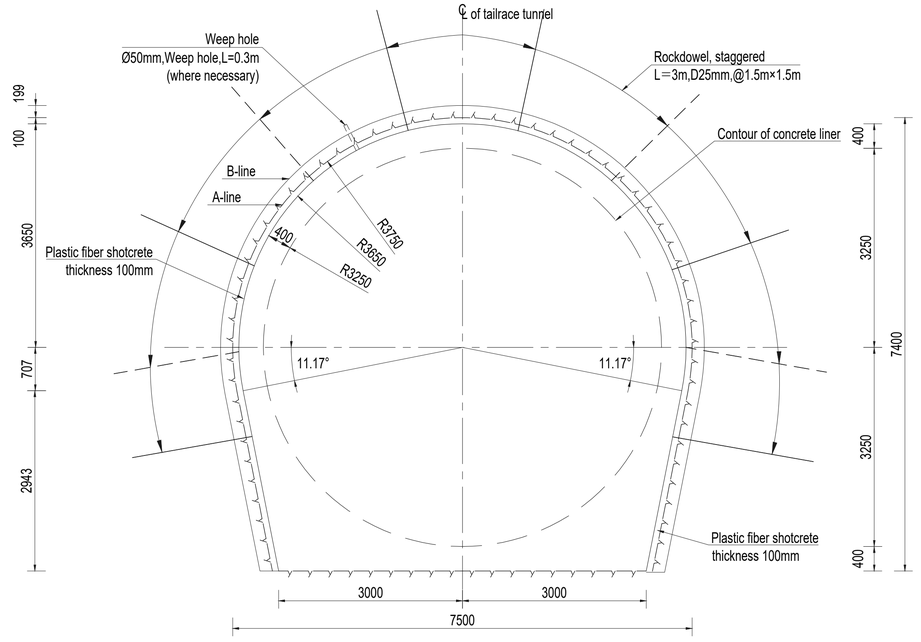
SUPPORT TYPE OF ROCK CLASS II
(SECTION D-D) Scale 1:50



SUPPORT TYPE OF ROCK CLASS III
(SECTION D-D) Scale 1:50



SUPPORT TYPE OF ROCK CLASS IV
(WITHOUT STEEL SUPPORT)
(SECTION D-D) Scale 1:50



NOTE

1. This set of drawings are the excavation and support of tailrace tunnel.
2. All dimensions are in millimeters, and coordinates, chainages & elevations are in meters.
3. Other see sheet 2.

Scale:
1:50 0 0.5 1 1.5 2 2.5m

REFERENCE DRAWINGS

UT1-C-070-CVL-DG-59001	LAYOUT OF TAILRACE SYSTEM
UT1-C-080-CVL-DG-59001	EXCAVATION AND SUPPORT DRAWING OF TAILRACE OUTLET GATE CHAMMBER
UT1-C-000-CVL-DG-40001	DETAILED DESIGN DRAWING OF EXCAVATION AND SUPPORT FOR UNDERGROUND CAVERN

SYMBOL AND LEGEND

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A	11.APR.,2022	FIRST ISSUE	ZHANG KAI	ZHANG J.Q.	ZHANG FAN LI W.C.

PROJECT TITLE
Upper Trishuli-1 HEP (216MW)

OWNER
NWEDC NEPAL WATER AND ENERGY DEVELOPMENT CO. PVT. LTD.

OWNER'S ENGINEER
TRACTEBEL ENGIE
jade CONSULT

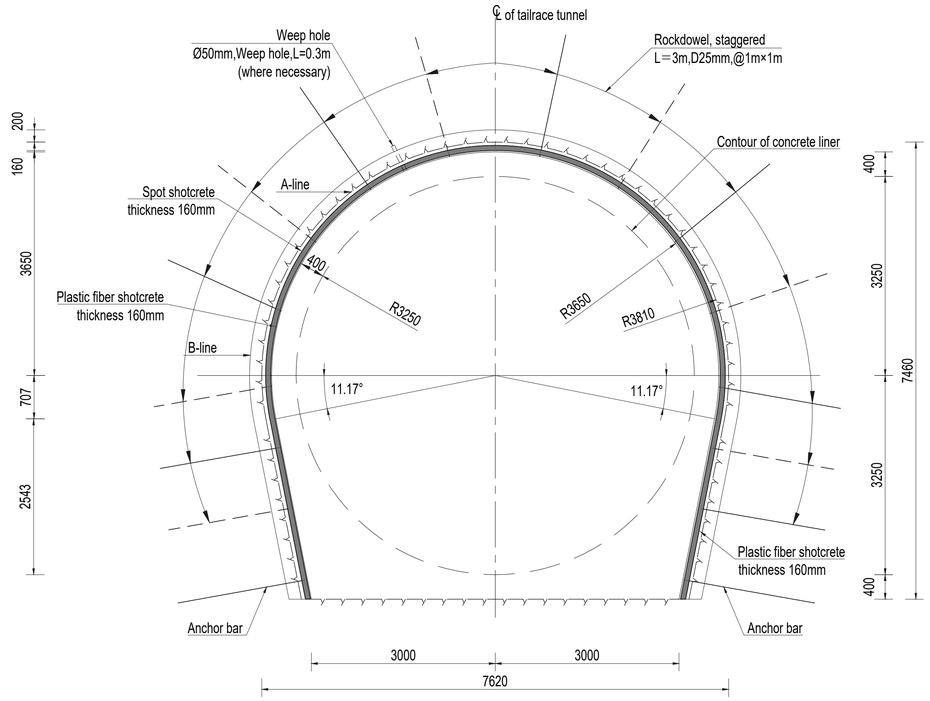
CONTRACTOR
DOOSAN Doosan Heavy Industries & Construction

DRAWING TITLE
EXCAVATION AND INITIAL SUPPORT DRAWINGS OF TAILRACE TUNNEL(3/7)

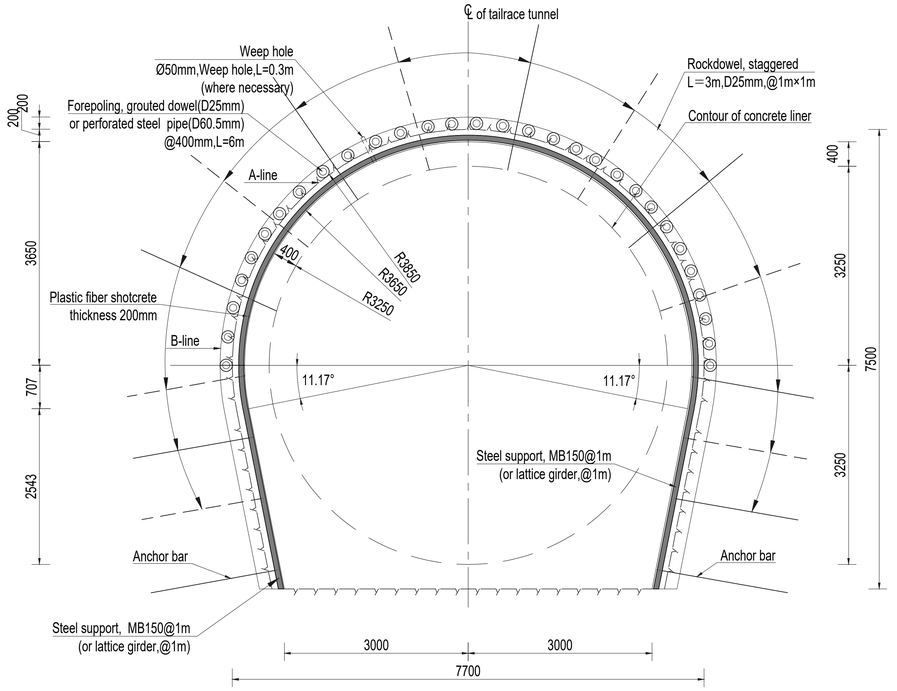
INDEX	DRAWING NUMBER	SHEET NO.	REV. NO.
A	UT1-C-070-CVL-DG-59002-03	3 OF 7	0A

A1 (594 x 841 MM)

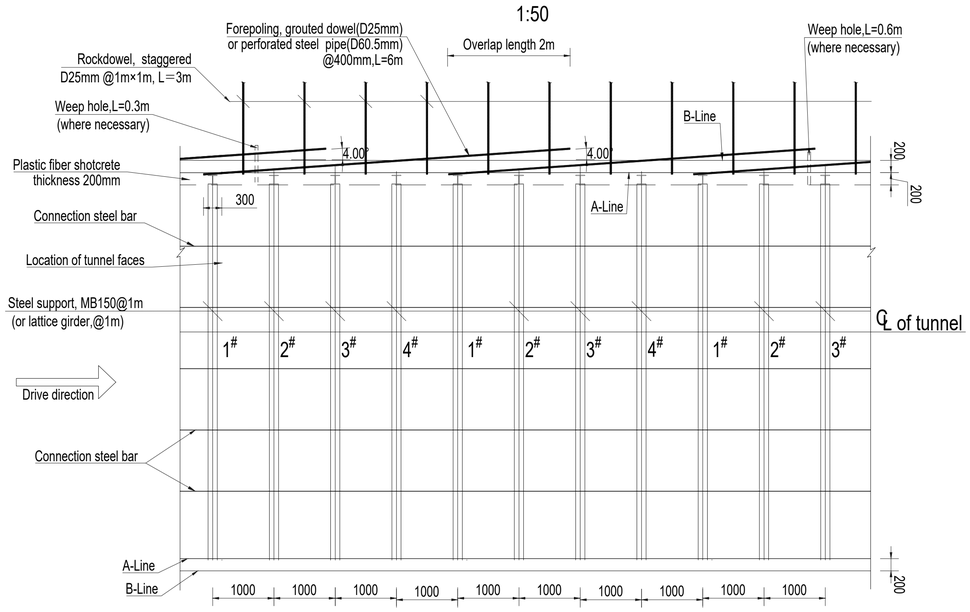
SUPPORT TYPE OF ROCK CLASS IV
(WITH STEEL SUPPORT)
(SECTION D-D) Scale 1:50



CROSS SECTION OF FOREPOLING
(SECTION D-D) Scale 1:50



LONGITUDINAL PROFILE OF FOREPOLING
1:50



NOTE: (1)The gaps behind the steel ribs need always be filled with shotcrete and/or concrete, not with rock blocks.
(2)The excavation profile may need to be adjusted to a "saw-tooth profile" and size of ribs/girders may also be adjusted.

NOTE

1. This set of drawings are the excavation and support of tailrace tunnel.
2. All dimensions are in millimeters, and coordinates, chainages & elevations are in meters.
3. Other see sheet 2.

Scale:
1:50 0 0.5 1 1.5 2 2.5m

REFERENCE DRAWINGS

UT1-C-070-CVL-DG-59001	LAYOUT OF TAILRACE SYSTEM
UT1-C-080-CVL-DG-59001	EXCAVATION AND SUPPORT DRAWING OF TAILRACE OUTLET GATE CHANMBER
UT1-C-000-CVL-DG-40001	DETAILED DESIGN DRAWING OF EXCAVATION AND SUPPORT FOR UNDERGROUND CAVERN

SYMBOL AND LEGEND

FOR APPROVAL

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A	11.APR.,2022	FIRST ISSUE	ZHANG KAI	ZHANG J.Q.	ZHANG FAN LI W.G.

PROJECT TITLE
Upper Trishuli-1 HEP (216MW)

OWNER
NWEDC NEPAL WATER AND ENERGY DEVELOPMENT CO. PVT.LTD.

OWNER'S ENGINEER
TRACTEBEL ENGIE
jade CONSULT

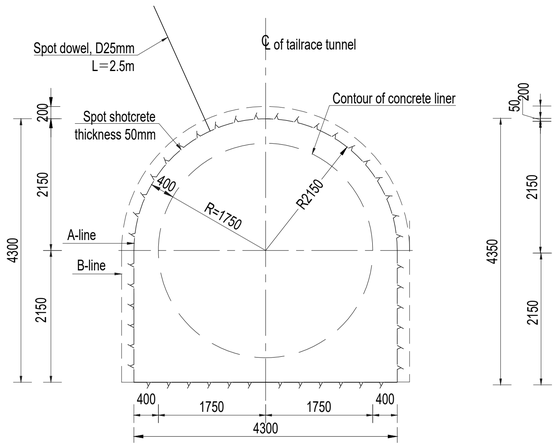
CONTRACTOR
DOOSAN Doosan Heavy Industries & Construction

DRAWING TITLE
EXCAVATION AND INITIAL SUPPORT DRAWINGS
OF TAILRACE TUNNEL(4/7)

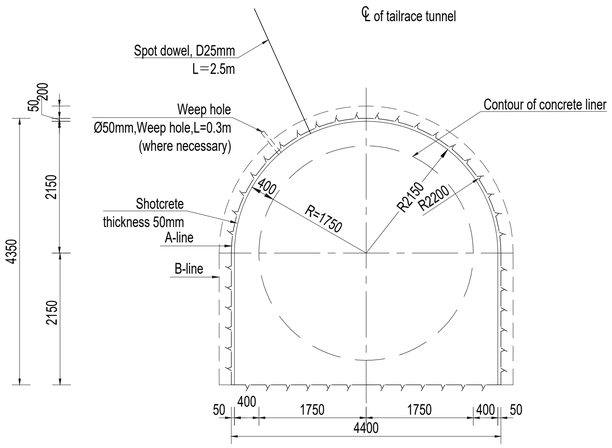
INDEX	DRAWING NUMBER	SHEET NO.	REV. NO.
A	UT1-C-070-CVL-DG-59002-04	4 OF 7	0A

A1 (594 x 841 MM)

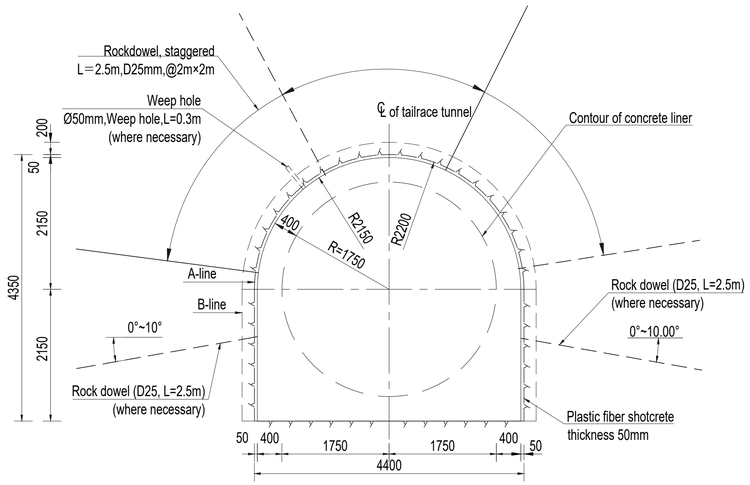
SUPPORT TYPE OF ROCK CLASS I
(SECTION E-E) Scale 1:50



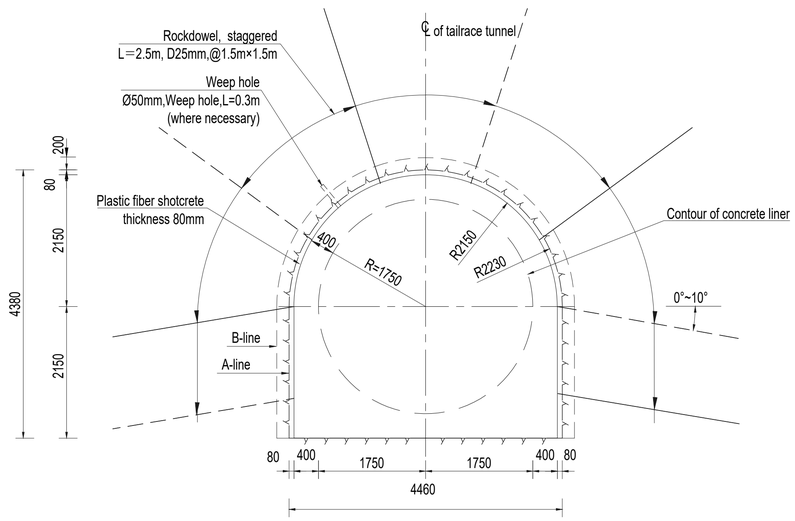
SUPPORT TYPE OF ROCK CLASS II
(SECTION E-E) Scale 1:50



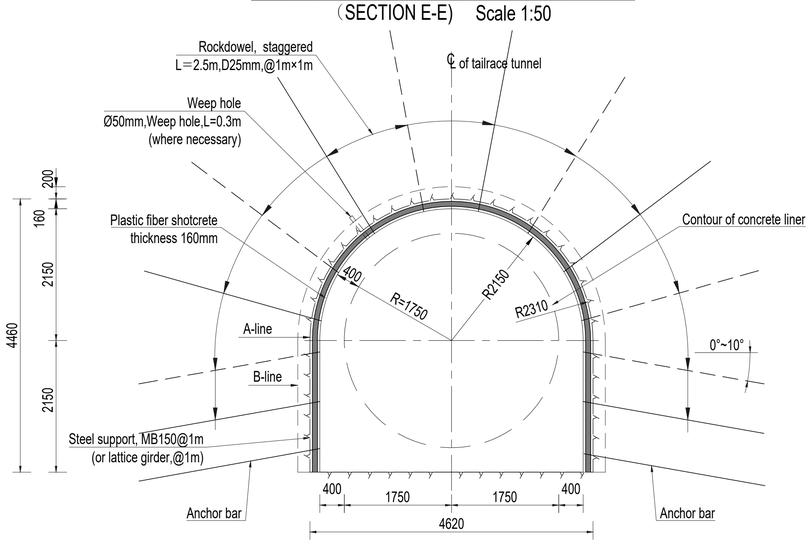
SUPPORT TYPE OF ROCK CLASS III
(SECTION E-E) Scale 1:50



SUPPORT TYPE OF ROCK CLASS IV
(WITHOUT STEEL SUPPORT)
(SECTION E-E) Scale 1:50



SUPPORT TYPE OF ROCK CLASS IV
(WITH STEEL SUPPORT)
(SECTION E-E) Scale 1:50



NOTE

1. This set of drawings are the excavation and support of tailrace tunnel.
2. All dimensions are in millimeters, and coordinates, chainages & elevations are in meters.
3. Other see sheet 2.

Scale:
1:50 0 0.5 1 1.5 2 2.5m

REFERENCE DRAWINGS

UT1-C-070-CVL-DG-59001	LAYOUT OF TAILRACE SYSTEM
UT1-C-080-CVL-DG-59001	EXCAVATION AND SUPPORT DRAWING OF TAILRACE OUTLET GATE CHAMMBER
UT1-C-000-CVL-DG-40001	DETAILED DESIGN DRAWING OF EXCAVATION AND SUPPORT FOR UNDERGROUND CAVERN

SYMBOL AND LEGEND

FOR APPROVAL

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A	11.APR.,2022	FIRST ISSUE	ZHANG KAI	ZHANG J.Q.	ZHANG FAN LI W.G.

PROJECT TITLE
Upper Trishuli-1 HEP (216MW)

OWNER
NWEDC NEPAL WATER AND ENERGY DEVELOPMENT CO. PVT.LTD.

OWNER'S ENGINEER
TRACTEBEL ENGIE
jade CONSULT

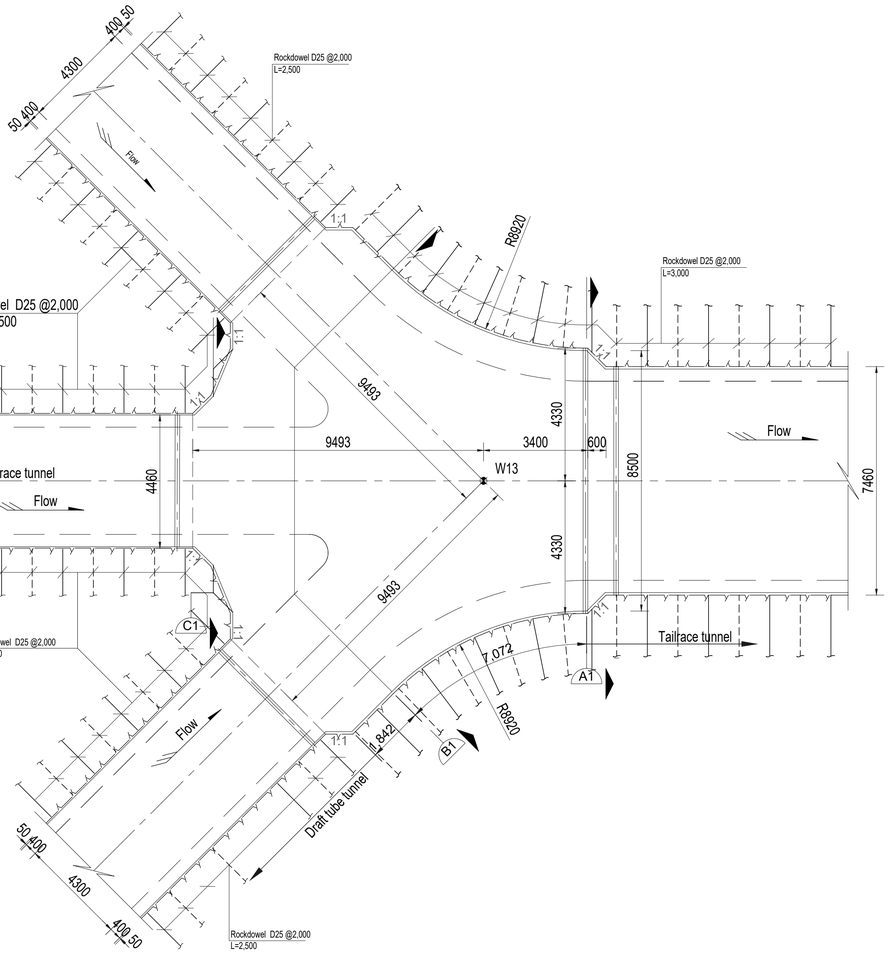
CONTRACTOR
DOOSAN Doosan Heavy Industries & Construction

DRAWING TITLE
EXCAVATION AND INITIAL SUPPORT DRAWINGS OF TAILRACE TUNNEL(5/7)

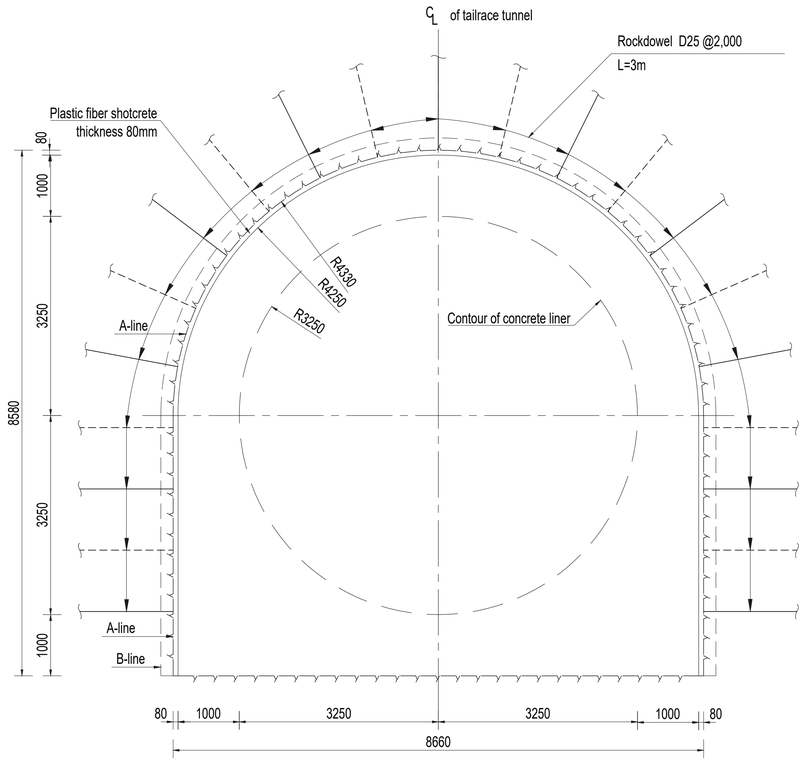
INDEX	DRAWING NUMBER	SHEET NO.	REV. NO.
A	UT1-C-070-CVL-DG-59002-05	5 OF 7	0A

A1 (594 x 841 MM)

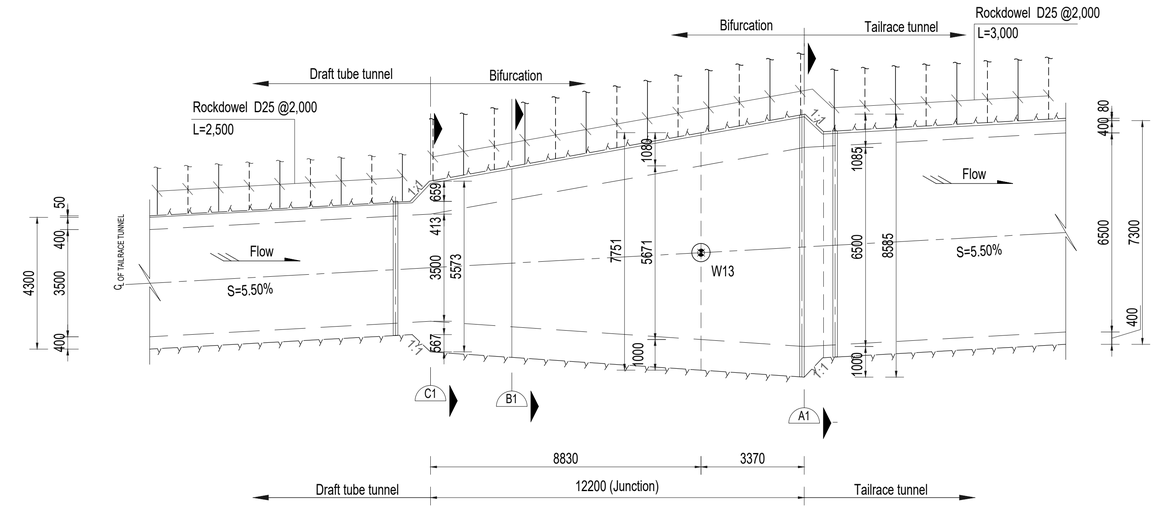
EXCAVATION PLAN FOR JUNCTION OF TAILRACE TUNNEL
Scale 1:100



SECTION A1-A1
Scale 1:50



PROFILE FOR JUNCTION OF TAILRACE TUNNEL
Scale 1:100



NOTE

1. This set of drawings are the excavation and support of tailrace tunnel.
2. All dimensions are in millimeters, and coordinates, chainages & elevations are in meters.
3. Other see sheet 2.

Scale:

1:100 0 1 2 3 4 5m

1:50 0 0.5 1 1.5 2 2.5m

REFERENCE DRAWINGS

UT1-C-070-CVL-DG-59001	LAYOUT OF TAILRACE SYSTEM
UT1-C-080-CVL-DG-59001	EXCAVATION AND SUPPORT DRAWING OF TAILRACE OUTLET GATE CHANMBER
UT1-C-000-CVL-DG-40001	DETAILED DESIGN DRAWING OF EXCAVATION AND SUPPORT FOR UNDERGROUND CAVERN

SYMBOL AND LEGEND

FOR APPROVAL

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A	11.APR.,2022	FIRST ISSUE	ZHANG KAI	ZHANG J.Q.	ZHANG FAN LI W.G.

PROJECT TITLE

Upper Trishuli-1 HEP (216MW)

OWNER

NWEDC NEPAL WATER AND ENERGY DEVELOPMENT CO. PVT. LTD.

OWNER'S ENGINEER

TRACTEBEL ENGIE

jade CONSULT

CONTRACTOR

DOOSAN Doosan Heavy Industries & Construction

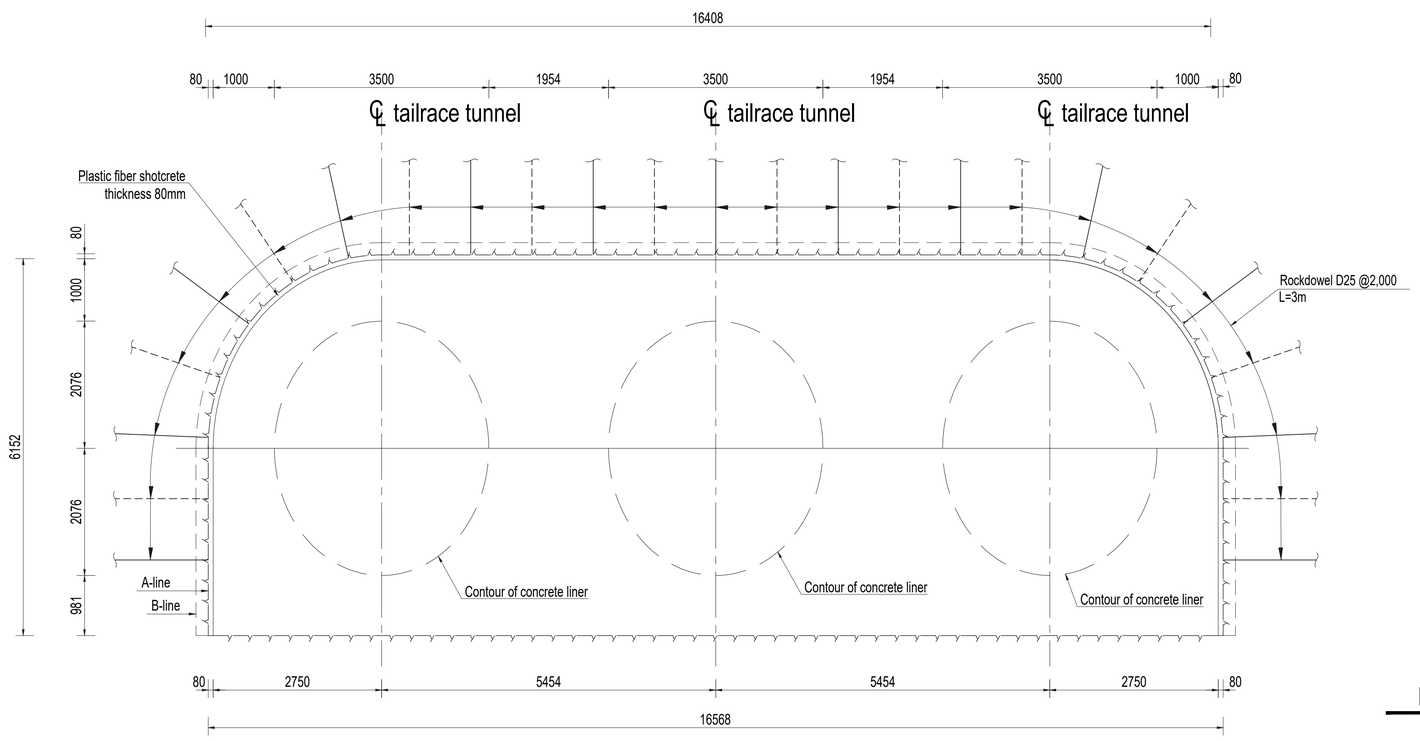
DRAWING TITLE

EXCAVATION AND INITIAL SUPPORT DRAWINGS OF TAILRACE TUNNEL(6/7)

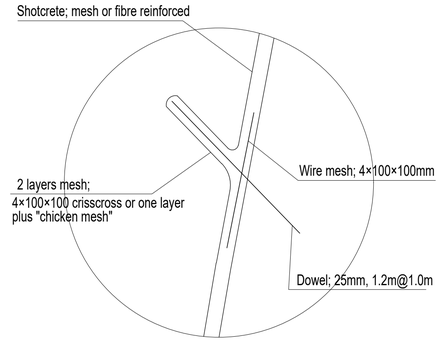
INDEX	DRAWING NUMBER	SHEET NO.	REV. NO.
A	UT1-C-070-CVL-DG-59002-06	6 OF 7	0A

A1 (594 x 841 MM)

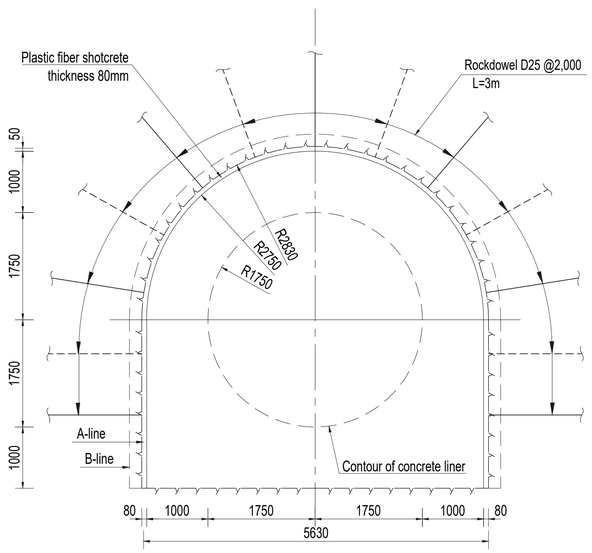
SECTION B2-B2
Scale 1:50



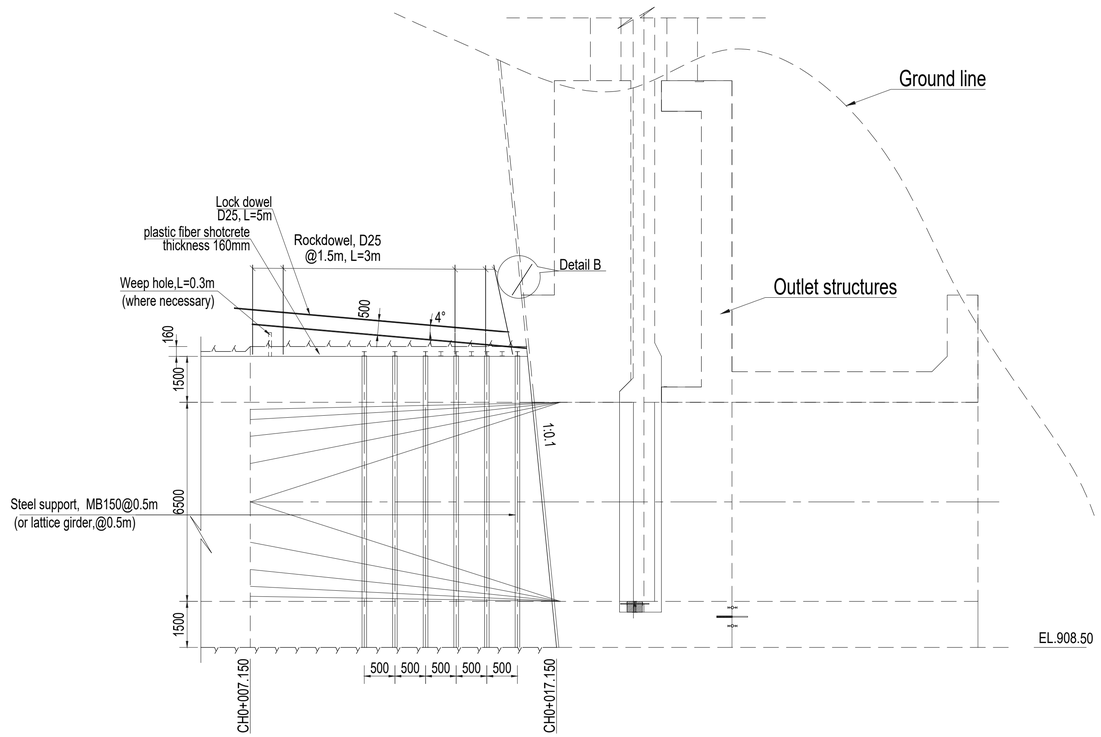
Detail B
1:20



SECTION C1-C1
Scale 1:50



DETAIL A
1:100



NOTE：The number and distance of the steel ribs shall be determined by the site geological conditions.

NOTE

1. This set of drawings are the excavation and support of tailrace tunnel.
2. All dimensions are in millimeters, and coordinates, chainages & elevations are in meters.
3. Other see sheet 2.

Scale:
1:50 0 0.5 1 1.5 2 2.5m
1:100 0 1 2 3 4 5m
1:20 0 0.2 0.4 0.6 0.8 1m

REFERENCE DRAWINGS

UT1-C-070-CVL-DG-59001	LAYOUT OF TAILRACE SYSTEM
UT1-C-080-CVL-DG-59001	EXCAVATION AND SUPPORT DRAWING OF TAILRACE OUTLET GATE CHAMMBER
UT1-C-000-CVL-DG-40001	DETAILED DESIGN DRAWING OF EXCAVATION AND SUPPORT FOR UNDERGROUND CAVERN

SYMBOL AND LEGEND

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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.
A	11.APR.,2022	FIRST ISSUE	ZHANG KAI	ZHANG J.Q.	ZHANG FAN LI W.C.

PROJECT TITLE
Upper Trishuli-1 HEP (216MW)

OWNER
NWEDC NEPAL WATER AND ENERGY DEVELOPMENT CO. PVT.LTD.

OWNER'S ENGINEER
TRACTEBEL ENGIE
jade CONSULT

CONTRACTOR
DOOSAN Doosan Heavy Industries & Construction

DRAWING TITLE
EXCAVATION AND INITIAL SUPPORT DRAWINGS
OF TAILRACE TUNNEL(7/7)

INDEX	DRAWING NUMBER	SHEET NO.	REV. NO.
A	UT1-C-070-CVL-DG-59002-07	7 OF 7	0A

A1 (594 x 841 MM)